

Fig. S1. Live imaging of a developing ommatidium. (A-E) Stills from supplementary material Movies 3 and 4. Red is R8, the presumptive R2/R5 are yellow and the presumptive R3/R4 are green (Wolff and Ready, 1976). The mystery cell 1 is turquoise. Random cells are annotated in blue and pink. (A) Type1-arc. (B) 6-cell rosette. (C) The AJ between R3 and R4 starts to elongate. (D,E) 5-cell pre-cluster. A red arrow indicates the axis of symmetry of an ommatidium that rotates in the plane of the epithelium. Scale bar: 2 μm .

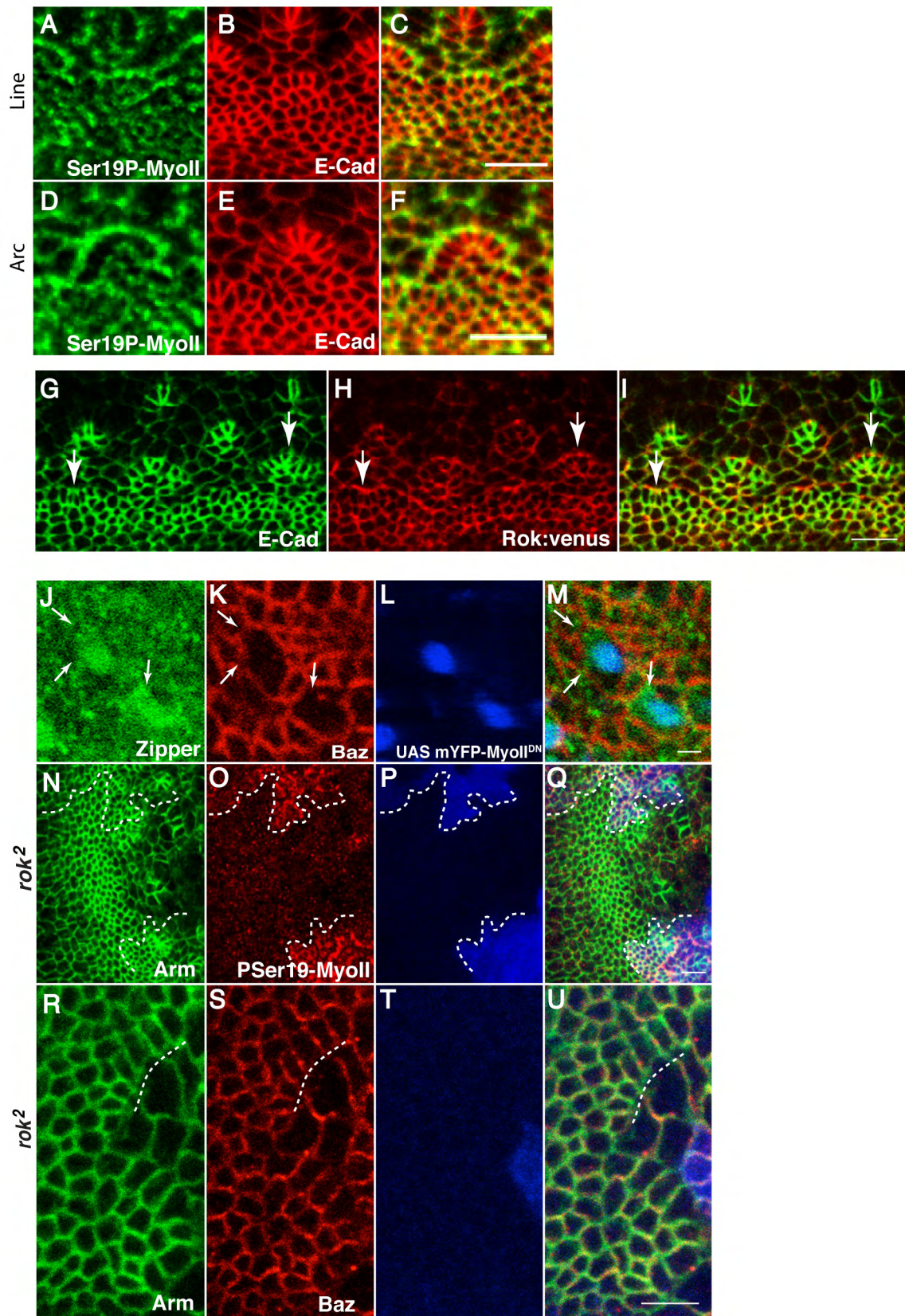


Fig. S2. Rok, MyoII and early multicellular patterning in the retina. (A-F) Ser19P-MyoII (green) and E-Cad (red) staining illustrate a typical line (A-C) and a typical arc (D-F). (G-I) Eye discs expressing Rok::Venus (red) stained for E-Cad (green). Arrows indicate typical lines and arcs. (J-M) High magnification of two cells in the MF, expressing the YFP-MyoII^{DN} transgene (blue). Zipper (Myosin Heavy Chain; zip – FlyBase) is shown in J and Baz is shown in K. White arrows indicate medial MyoII meshwork. (N-Q) *rok*² clones lack GFP (blue). Arm (green), SerP19-MyoII (red). Dashed line delineates the mutant tissue. (R-U) *rok*² clones lack GFP (blue). Arm (green) and Baz (red). Dashed line highlights a line of cells. Scale bars: in A-I, N-U, 5 μm; in J-M, 1 μm.

Table S1. Average length of posterior AJs and mediolateral AJs in lines and arcs

	Average length of posterior AJs (μm)	s.d.	Number of AJs	Average length of mediolateral AJs (μm)	s.d.	Number of AJs
Lines	0.83	0.27	26	1.36	0.22	26
Arcs	0.95	0.25	32	1.41	0.23	32

Three animals quantified

Table S2. Average mean pixel intensity of Baz, E-Cad and Myo II in posterior AJs relative to mediolateral AJs in lines and arcs

		Average mean pixel intensity at posterior AJs relative to mediolateral AJs	s.d. of the average	Number of lines/arcs quantified
Lines	E-Cad	0.79	0.07	5
	Myo II	2.00	0.31	5
	Baz	0.56	0.17	6
Arcs	E-Cad	0.65	0.06	5
	Myo II	2.51	0.23	5
	Baz	0.52	0.09	5

Five animals quantified

Table S3. Average apical surface area and perimeter of MF cells in *ato* clones

	Average apical surface area (μm^2)	s.d. of the average	Average apical perimeter (μm)	s.d. of the average	Number of cells
WT tissue	0.97	0.16	3.89	0.35	20
Clone interior	1.49	0.28	4.83	0.43	19

Example in Fig. 5E-G quantified (representative of five animals)

Table S4. Average mean pixel intensity of E-Cad in *ato* clones

	Average mean pixel intensity of E-Cad	s.d. of the average	Number of AJs
WT tissue	183	21.6	30
Clone interior	130	25.8	30

Example in Fig. 5E-G quantified

Table S5. Average mean pixel intensity of E-cad in *UAS-ato* clones in the anterior compartment

	Average mean pixel intensity of E-Cad	s.d. of the average	Number of AJs
WT tissue	92	23	20
Clone interior	209.4	31	17
Clone interface	113.5	32.5	22

Example in Fig. 5J-M quantified (representative of ten animals)

Table S6. Average mean pixel intensity of Baz in *UAS-ato* clones in the anterior compartment

	Average mean pixel intensity of Baz	s.d. of the average	Number of AJs
WT tissue	120	20	20
Clone interior	157	44.3	20
Clone interface	71	14.6	16

Example in Fig. 5N-Q quantified